AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

FIG. 1

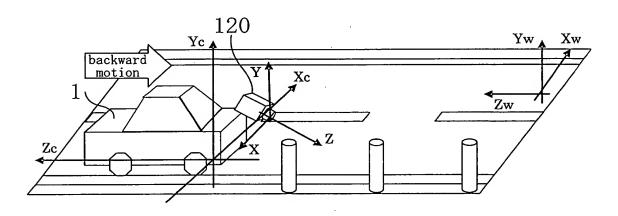
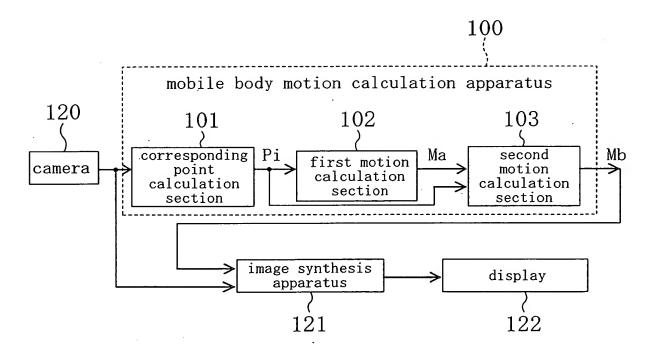


FIG. 2



Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135



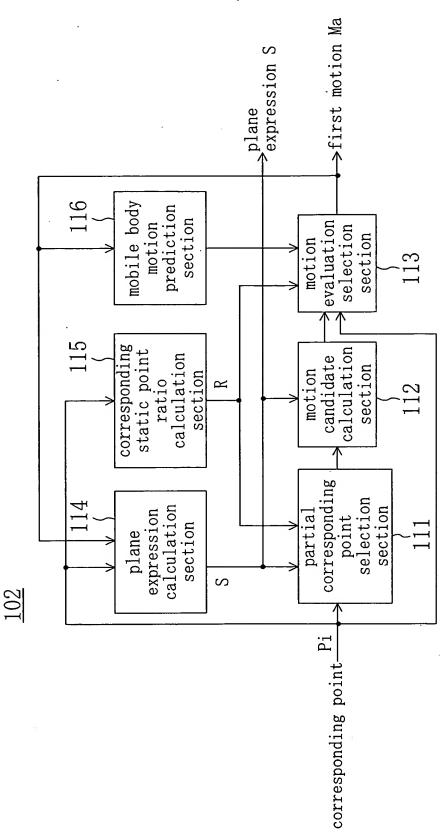


FIG. 3

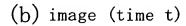
Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

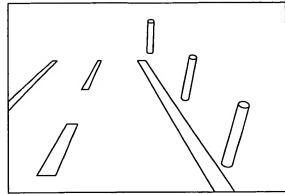
3/14

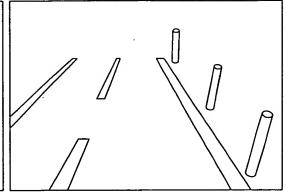
FIG. 4

(a) image (time t-1)

2 39 Sec.

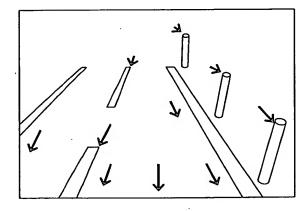


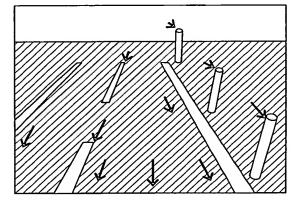




(c) corresponding point $(t-1 \rightarrow t)$

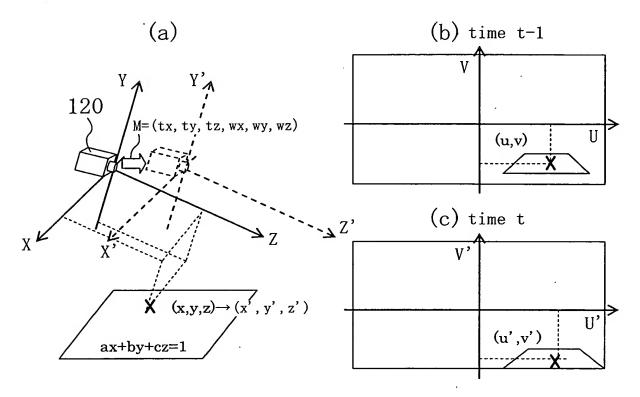
(d) road surface plane range





AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

4/14 FIG. 5



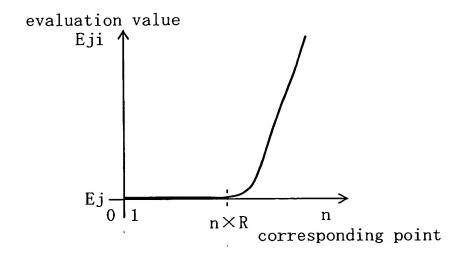
10/540135

5/14

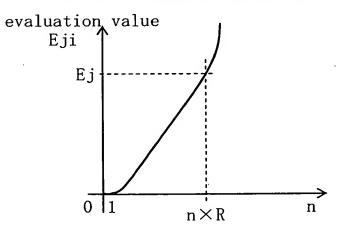
FIG. 6

(a)

correct camera motion Mj



(b) incorrect camera motion Mj

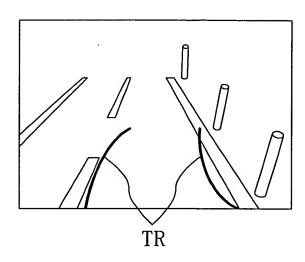


corresponding point

Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

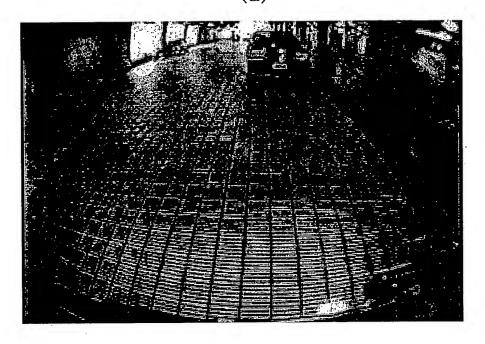
FIG. 7

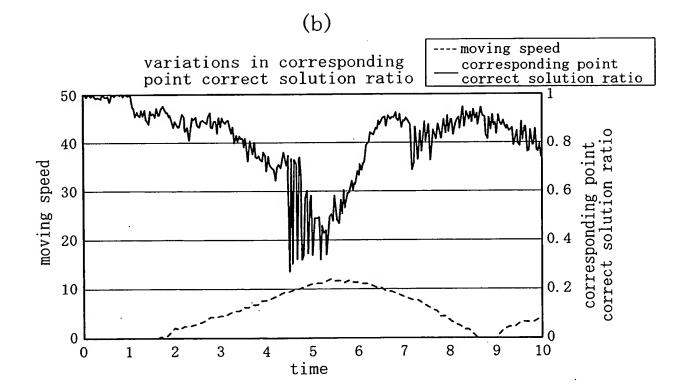


AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

7/14 FIG. 8 (a)





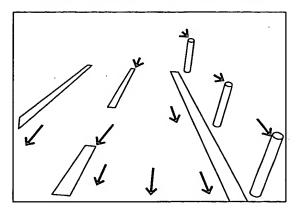
BEST AVAILABLE COPY

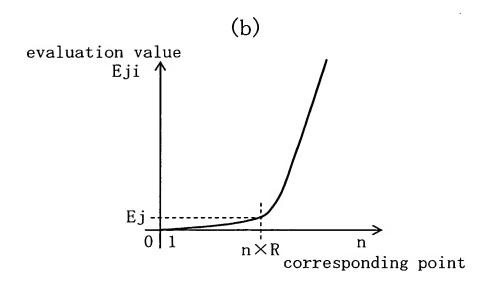
10/540135

8/14

FIG. 9
(a)

road surface is inclined



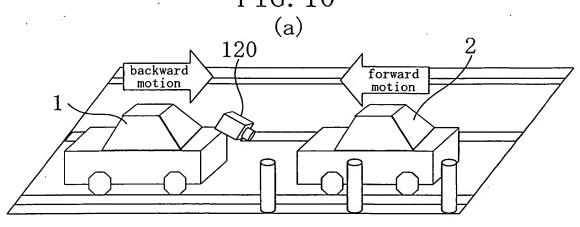


AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

<u>~9/14</u>

FIG. 10



(b)

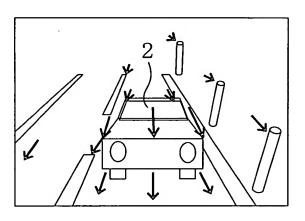
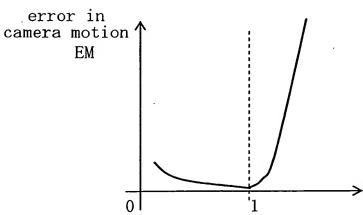


FIG. 11



ratio of corresponding static point ratio to true value (R/Rtrue)

AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

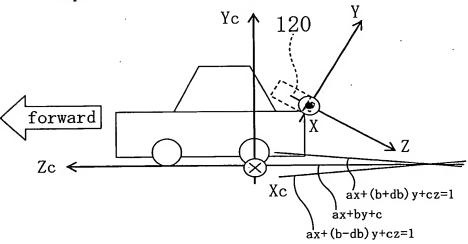
10/540135

10/14

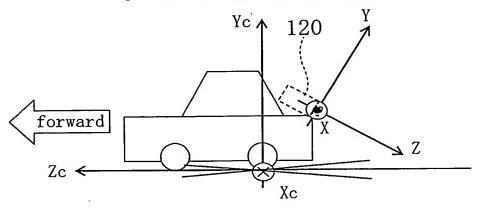
FIG. 12

(a)

viewpoint coordinate system is used as reference



(b)
middle point of rear wheel which contacts
ground is used as reference



AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

FIG. 13

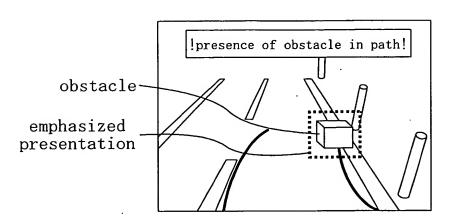
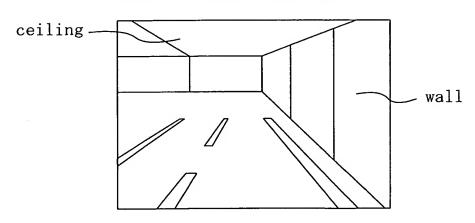
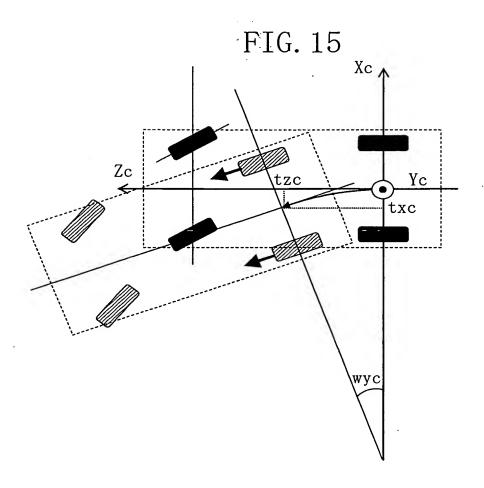


FIG. 14 image of indoor parking lot

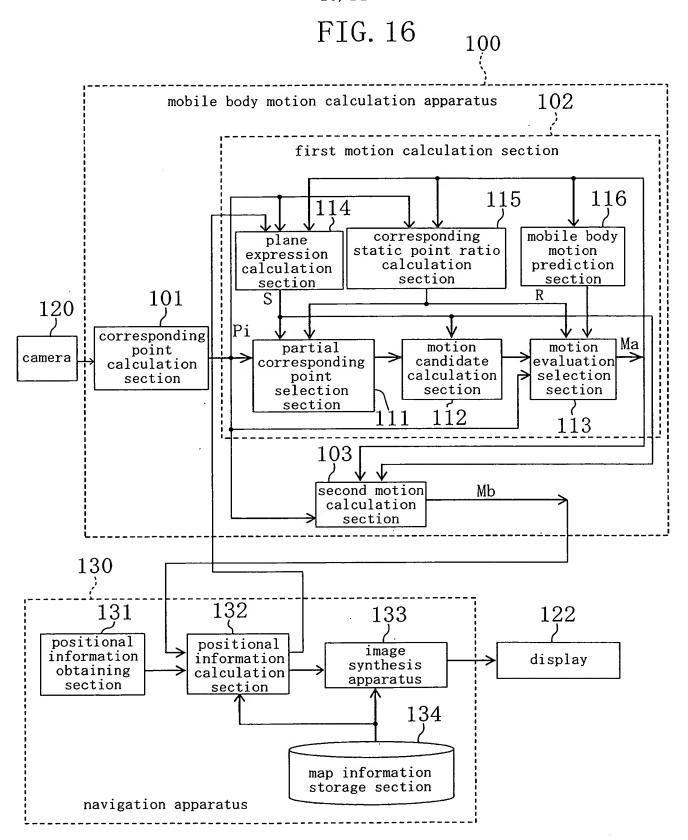


AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135



10/540135



10/540135

14/14

FIG. 17

trajectory of moving vehicle calculated
from images (world coordinate system)

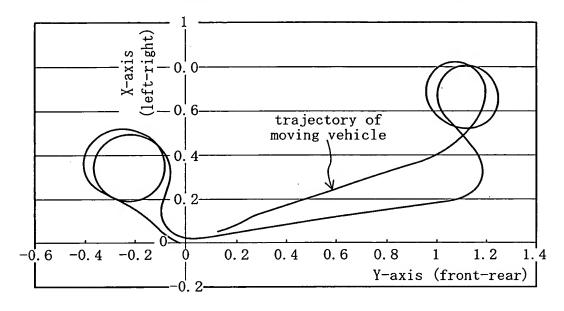


FIG. 18

